

I claim:

1. A method for detecting an analyte of interest using nucleounits targeted to said analyte of interest comprising:

- a) identifying a nucleounit from a mixture of synthetic random sequences of nucleounit libraries, by the method comprising
  - i) contacting the analyte of interest with said mixture, wherein the nucleounits have an affinity to the analyte of interest and bind the said analyte;
  - ii) the unbound nucleounits are removed by partitioning;
  - iii) the remaining nucleounits are amplified by polymerase chain reaction to obtain an enriched solution of nucleounits with high affinity for the analyte of interest;
- b) nucleounits are then conjugated to indicator for the analyte of interest forming an nucleounit indicator conjugate;
- c) detecting the analyte of interest using said nucleounit indicator conjugate in a buffer.

2. The method according to claim 1 wherein said nucleounit indicator conjugate consist of a nucleounit conjugated to an indicator which can be selected from the group consisting of particles of any color and material including rubber, latex, plastics, synthetic solids, and metals, 4-Aminophenyl-beta-D-galactopyranoside, 3-indoxyl-beta-D-galactopyranoside (blue), 5-Bromo-4-chloro-3-indoxyl-beta-D-galactopyranoside (blue), 5-Bromo-3-indoxyl-beta-D-galactopyranoside (blue), 6-chloro-3-indoxyl-beta-D-galactopyranoside (salmon), 5-bromo-6-chloro-3-indoxyl-beta-D-galactopyranoside (Magenta- beta- D-Gal) 6-Fluoro-3-indoxyl-beta-D-galactopyranoside, 8-Hydroxyquinoline-beta-D-galactopyrano-side, 5-Iodo-3-indoxyl-beta-D-galactopyranoside (purple), 2-Nitrophenyl-beta-D-galactopyranoside, 4-Nitrophenyl-beta-D-galactopyranoside, Naphthol AS-BI-beta-D-galactopyranoside, 2-Naphthyl-beta-D-galactopyranoside (yellow), 4-Methylumbelliferyl-beta-D-glucuronic acid, galactosidase, beta-D-Galactosidase, Iodo-3-indoxyl-beta-D-galactopyranoside, alpha-L-Galactosidase, Iodo-3-indoxyl-alpha-L-galactopyranoside, beta-D-Cellobiosidase, 5-Bromo-4-chloro-3-indoxyl-beta-D-cellobioside, 5-Bromo-6-chloro-3-indoxyl-beta-D-cellobioside, 4-Nitrophenyl-beta-D-cellobioside, 1-Naphthyl-cellobioside, 4-Methylumbelliferyl-beta-D-cellobioside, glycosidases, galactosidase, gellobiosidase, Arabinosidase, Fucosidase, Galactosaminidase, Glucosaminidase,

Glucosidase, Glucuronidase, Lactosidase, Maltosidase, Mannosidase, Xylosidase, arabinopyranoside, Fucopyranoside, Galactosaminide, Glucosaminide, Glucopyranoside, Glucuronic acid, Lactopyranoside, Maltopyranoside, Mannopyranoside, Xylopyranoside, 5-Bromo-4-chloro-3-indoxyl, 5-Bromo-6-chloro-3-indoxyl, 6-chloro-3-indoxyl, 5-Bromo-3-indoxyl, 5-Iodo-3-indoxyl, 3-indoxyl, 2-(6-Bromonaphthyl), 6-Fluoro-3-indoxyl 2-Nitrophenyl, 4-Nitrophenyl, 1-Naphthyl, Naphthyl AS-BI, 2-Nitrophenyl-N-acetyl, 4-Nitrophenyl-N-acetyl, 4-Methylumbelliferyl moieties, esterases, Carboxyl esterase, Cholesterol esterase, sulfatases, Aryl sulfatase, phosphatases, Alkaline phosphatase, Carboxyl esterase, 6-chloro-3-indoxyl butyrate, Aryl sulfatase, 5-bromo-4-chloro-3-indoxyl sulfate, alkaline phosphatase 2-naphthyl, dehydrogenase, oxidase, hydroxylase, oxidoreductase, dehydrogenases, hydroxylases,  $\alpha$ -NAD, nicotinamide adenine dinucleotide, nicotinamide adenine dinucleotide 3'-phosphate, nicotinamide adenine dinucleotide phosphate, triphosphopyridine, nicotinamide 1-N1-etheno adenine dinucleotide phosphate, nicotinamide hypoxanthine dinucleotide, nicotinamide hypoxanthine dinucleotide phosphate, nicotinamide mononucleotide, nicotinamide N1-propylsulfonate, nicotinamide ribose monophosphate, Formaldehyde dehydrogenase, Fructose dehydrogenase, Glucose-6-phosphate dehydrogenase, Glucose dehydrogenase, Glutamate dehydrogenase, Glycerol dehydrogenase, Glycerol-3-phosphate dehydrogenase, hydroxybutyrate dehydrogenase, Hydroxybenzoate hydroxylase, Lactate dehydrogenase, Leucine dehydrogenase, Malate dehydrogenase, Mannitol dehydrogenase, oxidases, Acyl-CoA oxidase, alcohol oxidase, Ascorbate oxidase, Cholesterol oxidase, Choline oxidase, Glucose oxidase, Glycerophosphate oxidase, Xanthine oxidase, Uricase, peroxidase, pyrogallol, ABTS (2,2'-Azinobis(3-ethylbenzthiazoline) sulfonic acid), 3,3',5,5'-Tetramethylbenzidine, ortho-Dianisidine, 3,3'-Diaminobenzidine, AEC (3-Amino-9-ethyl carbazole), 2-5, dimethyl-2,5-dihydroperoxyhexane, Bis{4-[N-(3'-sulfo-n-propyl)-N-n-ethyl]amino-2,6-dimethylphenyl}methane (Bis-MAPS), N-Ethyl-N-(2-hydroxy-3-sulfopropyl)-3-methoxyaniline (ADOS), N-Ethyl-N-(3-sulfopropyl)-3-methoxyaniline (ADPS), N-Ethyl-N-(2-hydroxy-3-sulfopropyl)aniline (ALOS), N-Ethyl-N-(3-sulfopropyl)-3,5-dimethylaniline (MAPS), N-Ethyl-N-(2-hydroxy-3-sulfopropyl)-3-methylaniline (TOOS), N-Ethyl-N-(3-sulfopropyl)-3-methylaniline (TOPS), N-(3-sulfopropyl)aniline (HALPS), N-Ethyl-N-(2-hydroxy-3-sulfopropyl)-3,5-dimethoxyaniline (DAOS), N-Ethyl-N-(3-sulfopropyl)-3,5-dimethoxyaniline (DAPS), N-Ethyl-N-(3-sulfopropyl)aniline (ALPS), N-(2-hydroxy-3-sulfopropyl)-3,5-dimethoxyaniline (HDAOS), N-

(3-sulfopropyl)-3,5-dimethoxyaniline (HDAPS), N-Ethyl-N-(2-hydroxy-3-sulfopropyl)-3,5-dimethylaniline (MAO), and N,N-Bis(4-sulfobutyl)-3,5-dimethylaniline (MADB), 3-Methyl-2-benzothiazolinonehydrazone, Dimerhylaniline, 4-aminoantipyrine, phenol, 2,4-Dichlorophenol, N,N-Diethyl-m-toluidine, p-Hydroxybenzene Sulfonate, N,N-Dimethylaniline, 3,5-Dichloro-2-Hydroxybenzenesulfonate, Sodium N-Ethyl-N-(3-Sulfopropyl)-m-Anisidine, N-Ethyl-N-(2-hydroxy-3-Sulfopropyl)-m-toluidine, NADPH oxidoreductase, NADPH, oxidoreductase, and NBT (nitro blue tetrazolium).

3. The method according to claim 1 wherein said buffer is selected from the group consisting of citrate, borate, phosphate, borax, sodium tetraborate decahydrate, sodium perchlorate, sodium chlorate, sodium carbonate, TRIS (Tris[hydroxymethyl]aminomethane), MES (2-[N-Morpholino]ethanesulfonic acid), BIS-TRIS (bis[2-Hydroxyethyl]iminotris[hydroxymethyl]methane; 2-bis[2-Hydroxyethyl]amino-2-[hydroxymethyl-1,3-propanediol]), ADA (N-[2-Acetamidol]-2-iminodiacetic acid; N-[Carbaoylmethyl]iminodiacetic acid), ACES (2-[(2-Amino-2-oxoethyl)amino]ethanesulfonic acid; N-[2-Acetamido]-2-aminoethanesulfonic acid), PIPES (Piperazine-N'-bis[2-ethanesulfonic acid]); 1,4-Piperzinedethanesulfoic acid), MOPSO (3-[N-Morpholinol]-2-hydroxypropanesulfonic acid), BIS-TRIS PROPANE (1,3-bis[tris(Hydroxymethyl)methylamino]propane), BES (N,N-bis[2-Hydroxyethyl]-2-aminoethanesulfonic acid; 2-bis(2-Hydroxyethyl)amino]ethanesulfonic acid), MOPS (3-[N-Morpholino]propanesulfonic acid), TES (N-tris[Hydroxymethyl]methyl-2-aminomethanesulfonic acid; 2[2-Hydroxy-1,1-bis(hydroxymethyl)-ethyl]amino)ethanesulfonic acid), HEPES (N-[2-Hydroxyethyl]piperazine-N'-[2-ethanesulfonic acid]), DIPSO (3-[N,N-bis(2-Hydroxyethyl)amino]-2-hydroxypropanesulfonic acid), TAPSO (3-[N-tris(Hydroxyethyl)methylamino]-2-hydroxypropanesulfonic acid), HEPPSO (N-[2-Hydroxyethyl]piperazine-N'-[2-Hydroxypropanesulfonic acid]), POPSO (Piperazine-N,N'-bis[2-hydroxypropanesulfonic acid]), EPPS (N-[2-Hydroxyethyl]piperazine-N'-[3-propanesulfonic acid]), TEA (triethanolamine), TRICINE (N-tris[Hydroxymethyl]methylglycine; N-[2-Hydroxy-1,1-bis(hydroxymethyl)ethyl]glycine), BICINE (N,N-bis[2-Hydroxyethyl]glycine), TAPS (N-tris[Hydroxymethyl]methyl-3-aminopropanesulfonic acid; ([2-Hydroxy-1,1-bis(hydroxymethyl)ethyl]amino)-1-propanesulfonic acid), AMPSO (3-[(1,1-Dimethyl-2-

hydroxyethyl)amino]-2-hydroxypropanesulfonic acid), CHES (2-[N-Cyclohexylamino]ethanesulfonic acid), CAPSO (3-[Cyclohexylamino]-2-hydroxy-1-propanesulfonic acid), AMP 2-Amino-2-ethyl-1-propanol, CAPS (3-[cyclohexylamino]-1-propanesulfonic acid), hydrochloric acid, phosphoric acid, lactic acid, sulfuric acid, nitric acid, chromic acid, boric acid, perchloric acid, potassium hydrogen tartrate, potassium hydrogen phthalate, calcium hydroxide, phosphate, bicarbonate, sodium hydroxide, potassium hydroxide, oxalate or succinate.

4. The method according to claim 1 wherein said nucleounit is not a nucleic acid ligand.

5. The method according to claim 1 wherein said target compound is not a protein.

6. The method according to claim 1 wherein the nucleounit indicator conjugate does not have to be bound to a solid support.

7. The method according to claim 1 wherein the analyte of interest is selected from the group consisting of cocaine, opiates, gamma-hydroxybutyric acid, cannabinoids, benzodiazepines, acetaminophen, amikacin, aminocaproic acid, amitriptyline, amobarbital, amphetamine, bromide, caffeine, carbamazepine, carbenicillin, chloral hydrate, chloramphenicol, chlordiazepoxide, chlorpromazine, cimetidine, clonazepam, clonidine, clorazepate, cocaine, cocaine metabolites, ethanol, methanol, or other forms of alcohol, codeine, cyclosporine, desipramine, dexamethsone, diazepam, digoxin, diphenylhydantoin, disopyramide, doxepin, ephedrine, ethchlorvynol, ethosuximide, fenoprofen, flecainide, flurazepam, gentamicin, glutethimide, hydromorphone, ibuprofen, imipramine, isoniazid, kanamycin, lidocaine, lithium, lorazepam, lysergic acid, meperidine, meprobamate, methadone, methamphetamine, methaqualone, methotrexate, methsuximide, methyl dopa, methyprylon, morphine, n-acetylprocainamide, netilmicin, nortriptyline, oxazepam, oxycodone, paraldehyde, paraquat, pentazocine, pentobarbital, phenacetin, phencyclidine, phenobarbital, phensuximide, phenylbutazone, phenylpropanolamine, phenytoin, primidone, procainamide, propoxyphene, propranolol, protriptyline, quinidine, salicylates, secobarbital, theophylline, thiocyanate, thiopental, thioridazine, tobramycin, tolbutamide, valproic acid, vancomycin, cholesterol, triglycerides, glucose, adrenocorticotrophic

hormone, alanine, alanine aminotransferase, albumin, aldolase, aldosterone, amylase, amyloid-associated protein, androstenedione, angiotensin, antidiuretic hormone, antithrombin, antitrypsin, apolipoprotein, ascorbic acid, bile acids, bilirubin, c-peptide, calcitonin, calcium, cancer antigen 125, carboxyhemoglobin, carotene, catecholamines, cholic acid, cholyglycine, chromium, chymotrypsin, complement components, coproporphyrin, corticobinding globulin, corticosterone, cortisol, c-peptide, c-reactive protein, creatine, creatinine, creatine kinase, cyclic AMP, cystine, cysteine, dehydroepiandrosterone, dehydroepiandrosterone sulfate, deoxycholic acid, 11-deoxycorticosterone, 11-deoxycortisol, dihydrotestosterone, estradiol, estriol, estrogen, estrone, fecal fat, fatty acids, ferritin, fetoprotein, fibrinogen, folate, follicle stimulating hormone, thyroxine, triiodothyronine, fructose, fructosamine, galactose, gastric acid, gastrin, glucagons, glucose-6-phosphate, glutamine, glutamyltransferase (GGT), glutathione, hemoglobin, glycerol, glycine, glycolic acid, gold, gonadotropins, growth hormone, haptoglobin, high-density lipoproteins, hemopexin, homocystein, homocysteine, homogentisic acid, homovanillic acid, hydrogen sulfide, 17-hydroxycorticosteroids, 5-hydroxyindoleacetic acid, 17-hydroxyprogesterone, hydroxyproline, immunoglobins, insulin, iron, isocitrate dehydrogenase, isoleucine, 17-ketogenic steroids, ketone bodies, lactate, lactate dehydrogenase, lactose, LDL-cholesterol, lecithin, leucine, leukocyte, lipase, lipoproteins, lutropin, lysozyme, macroamylase, magnesium, melanin, metanephrine, methionine, metyrapone, microsomal antibodies, antibodies, molybdenum, mucopolysaccharide, myelin basic protein, myoglobin, methemoglobin, niacin, nickel, nitrite, nitrogen, nonprotein nitrogen, normetanephrine, blood, orosomucoid, oxalate, oxytocin, pancreatic polypeptide, pantothenic acid, parathyroid hormone, pentachlorophenol, pentoses, pepsinogen, phenols, phenolsulfonphthalein, phenylalanine, acid phosphatase, alkaline phosphatase, phosphofructokinase, phospholipids, placental lactogen, plasminogen, porphobilinogen, prealbumin, pregnanediol, chorionic gonadotropin, pregnanetriol, pregnenolone, progesterone, proinsulin, properdin, prostaglandins, prostate-specific antigen, portoporphyrin, pseudocholinesterase, pyruvic acid, renin, reverse triiodothyronine, rheumatoid factor, riboflavin, secretin, selenium, serotonin, somatomedin c, sucrose, testosterone, tetrahydrocortisol, tetrahydrodeoxycortisol, thallium, thyroglobin, thyroid antibodies, thyroid stimulating hormone, thyroxine binding globulin, thyroxine, transcortin, transferring, transketolase, transthyretin, thyrotropin-releasing hormone, triglycerides, triiodothyronine, tyrosine, urea, urea nitrogen, uric acid, uricase, urobilinogen, uroporphyrin, valine,

vanillylmandelic acid, vasoactive intestinal polypeptide, human chorionic gonadotropin, mass creatinine kinase, vitamins, xylose, zinc, cyanide, formaldehyde, ethylene glycol, lead, mercury, xylene, human immunodeficiency virus (HIV), cytomegalovirus (CMV) IgG, cytomegalovirus (CMV) IgM, herpes simplex virus (types 1 and 2) IgG, rubella IgG, rubella, IgM, toxoplasma IgG, toxoplasma IgM, amebiasis, Epstein-barr early antigen, Epstein-barr EBNA IgG, Epstein-barr VCA IgG, Epstein-barr VCA IgM, helicobacter pylori-IgG, legionella IgG/IgM/IgA, mycoplasma IgG, mycoplasma IgM, varicella zoster virus (VZV), or autoimmune diseases such as the following but not limited to the following; antinuclear antibodies (ANA), antineutrophil cytoplasmic antibodies (ANCA), anti-cardiolipin, anti-dsDNA, anti-Jo-1, anti-Scl-70, anti-Sm (Smith antigen), anti-Sm/RNP, anti-SS-A/Ro, anti-SS-B/La, extractable nuclear antigen (ENA), myeloperoxidase IgG, proteinase-3 IgG, or Rheumatoid Factor.